

GUJARAT TECHNOLOGICAL UNIVERSITY**ME Semester –II Examination Dec. - 2011****Subject code: 1721203****Date: 14/12/2011****Subject Name: Design of Canal Network and Regulation work****Time: 02.30 pm – 05.00 pm****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

- Q.1** (a) What is meant by regime of a river? Compare briefly the silt theories of Kennedy and Lacey. **07**
(b) Explain Super passage briefly with neat sketch. **07**

- Q.2** (a) Explain drawbacks of Lacey's theory. **07**
(b) Explain the use of Garret's diagrams for designing irrigation canals. **07**

OR

- (b) Design a channel using Lacey's theory to carry a discharge of 100 cumecs. Assume silt factor as 1. **07**

- Q.3** (a) What are outlets? Enumerate the different types of outlets and explain any one briefly. **07**
(b) Explain Lane's weighted creep theory. **07**

OR

- Q.3** (a) Explain sensitivity, flexibility, proportionality and setting. **07**
(b) What are the main causes of failures of weirs on permeable foundations and suggest remedies to prevent them? **07**

- Q.4** (a) Write short note on Exit gradient and its importance. **07**
(b) Explain various factors governing the design of a Weir or a Barrage. **07**

OR

- Q.4** (a) Write short note on Level crossing. **07**
(b) Design a Sarda type fall (crest and cistern) across a canal for the following data. Flow conditions on u/s and d/s remains same. **07**
- FSL discharge = 10 cumec
- Drop = 1.5 m
- FSL depth = 1.2 m
- Bed width = 10 m

- Q.5** (a) Describe briefly the step by step procedure followed to design Aquaduct. **07**
(b) Enumerate the different types of canal linings, and discuss the design and construction features of concrete lining. **07**

OR

- Q.5** (a) Explain Khosla's method of independent variables for determining pressures for seepage below weir. **07**

- (b) Determine uplift pressure at key points and Exit gradient for a weir of 07
following data:
Total length of impervious floor = 30 m
Head causing flow = 3.5 m
Depth of intermediate pile = 4.0 m
Distance of intermediate pile from u/s end = 10 m
